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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,213	06/01/2001	Tao Zhang	APP 1295-US	2394

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EXAMINER	
MOORE, IAN N	
ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/872,213	ZHANG ET AL.	
	Examiner	Art Unit	
	Ian N Moore	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *the application filed on 6/1/2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *6/1/01* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings (FIG. 2 and 3) are objected to because the legends on the Y-axis and the graphs are not clearly visible.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method steps define in claims 2, 5, 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

   The following title is suggested: **Method for handoff in multimedia wireless networks utilizing ARIMA model**.

Claim Objections

4. Claims 1,2, 6 and 8 are objected to because of the following informalities: Appropriate correction is required.

   - Claim 1 recites, "ARIMA" in line 5. For clarity, it is suggested to describe the acronym when reciting for the first time in the claim.
   - Claim 6 is missing a period "." in the end of the sentence.
   - Claim 8 recites, "ARMA" in line 10. For clarity, it is suggested to describe the acronym when reciting for the first time in the claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 2-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites, "an ARIMA (p,l,q)" in line 2. It is unclear what is variable/parameter/value "l" in an ARIMA (p,l,q) model, and whether "1" is used to estimate actual autoregressive and moving average parameter.

Claims 3-7 are also rejected since they depended on the rejected claim 2.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Aras (U.S. 5,884,037).

Regarding claim 1, Tellinger'273 discloses a method for IP wireless cell and its base station in an IP wireless network locally to predict mobile host network resource demands without communicating with other IP cells and their wireless base stations comprising

using an ARIMA model (see FIG. 1, bandwidth management system 100 utilizing ARIMA prediction; see col. 5, lines 34-49; see FIG. 14-17 shows a method for resource predication by using ARIMA).

Regarding claim 2, Tellinger'273 discloses wherein said ARINA model is an ARIMA (p,l,q) model and

performing an identification and estimation phase wherein the autoregressive variable "p" (see col. 4, lines 40-45, autoregressive term) and the moving average variable "q" (see col. 4, lines 40-45; moving average term) are identified (see col. 4, lines 32-41; note that in order to use ARIMA, autoregressive term and moving average term of the past must be identified) and the actual autoregressive and moving average parameter for the ARIMA (p,1,q) model are estimated (see col. 4, lines 32 to see col. 5, lines 57; note that in ARIMA prediction is performed in order to determine future behavior of network from one time period to the other by utilizing historic information. Thus, it is clear that by utilizing the previous identified autoregressive term and moving averaging term, the actual autoregressive term and moving averaging term can be predicted/estimated.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aras (U.S. 5,884,037) in view of Tellinger (U.S. 6,792,273)

Regarding claim 3, Aras'037 discloses applying the ARIMA (p,l,q) model to predict the future host resource demand as discloses above in claims 1 and 2.

Aras'037 does not explicitly disclose the handoff.

However, the above-mentioned claimed limitations are taught by Tellinger'273. In particular, Tellinger'273 teaches using an model/method predict the future handoff host resource demand (see FIG. 4, Radio Network Control Node or BS 40 which comprises Resource Handler 44, Communication Controller 42 and Diversity Handover Unit DHO 48; note that Radio Network Control Node BS predicts the future handover connection requests from Mobile Station 24 (see FIG. 1); see col. 5, line 60 to col. 7, lines 49).

In view of this, having the system of Aras'037 and then given the teaching of Tellinger'273, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Aras'037, by providing the mechanism of prediction handover connection request, as taught by Tellinger'273. The motivation to combine is to obtain the advantages/benefits taught by Tellinger'273 since Tellinger'273 states at col. 3, line 40 to col. 4, lines 44 that such modification would provide efficiently allocate resources in a timely fashion that keeps delays to a minimum.

Regarding claim 4, the combined system of Aras'037 and Tellinger'273 discloses all aspects of the claimed invention set forth in the rejection of Claim 1-4 as described above, and Tellinger'273 further teaches performing at a wireless base station (see FIG. 4, Radio Network Control Node or BS 40) based upon local observation of handoff demand (see FIG. 4, connection request and Resource Handler 44, Communication Controller 42 and Diversity Handover Unit DHO 48; note that BS 40 performs the prediction of handover connection request according to the determination in the resource handler, DHO unit, and

communication controller which are locally located within the BS 40; see col. 5, line 60 to col. 7, lines 49).

In view of this, having the system of Aras'037 and then given the teaching of Tellinger'273, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Aras'037 for the same motivation as stated above in Claims 1-3.

Regarding claim 5, the combined system of Aras'037 and Tellinger'273 discloses all aspects of the claimed invention set forth in the rejection of Claim 1-4 as described above, and Tellinger'273 further discloses handoff hosts (see Tellinger'273 FIG. 1, Mobile Station MS 22,24, and 26) and IP host (see Tellinger'273 col. 6, lines 15-24; a packet data service, thus, it is clear that the packet data service comprise the Internet packet data service) and IP network (see FIG. 1, the packet network that couples to RNC which also provide the packet data service also comprises the IP network).

Aras'037 discloses monitoring the amount of network resources requested by hosts (see FIG. 1, the connection control system monitors the reservation request from client) during an initial period of time (see FIG. 3, see col. 4, lines 45-59, see col. 5, lines 49-67, see col. 6, lines 50-67, see col. 7, lines 60 to col. 8, lines 5; note that the connection control system monitors the bandwidth request at each time interval) to create an initialized data set of host network resource demand R(t) (see FIG. 3, available bandwidth or previous/historic bandwidth; note that by the connection control system creates/produces available bandwidth connection based upon monitored values).

In view of this, having the system of Aras'037 and then given the teaching of Tellinger'273, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Aras'037 for the same motivation as stated above in Claims 1-4.

Regarding claim 6, the combined system of Aras'037 and Tellinger'273 discloses all aspects of the claimed invention set forth in the rejection of Claim 1-5 as described above, and Tellinger'273 discloses further handoff hosts (see Tellinger'273 FIG. 1, Mobile Station MS 22,24, and 26).

Aras'037 discloses using the initial data set of handoff host network resource demand R(t) (see FIG. 14, step 1403, Available Bandwidth) to determine the change in handoff network resource demand delta R (see FIG. 14, step 1403, the difference/delta between requested bandwidth and available bandwidth; note that during the prediction process, the change/delta/difference in bandwidth is determined by comparing requested bandwidth and current available bandwidth. In order to determine whether one parameter is less than the other, one must define the delta/differences; see col. 9, lines 10-41).

In view of this, having the system of Aras'037 and then given the teaching of Tellinger'273, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Aras'037 for the same motivation as stated above in Claims 1-5.

Regarding claim 7, the combined system of Aras'037 and Tellinger'273 discloses all aspects of the claimed invention set forth in the rejection of Claim 1-5 as described above.

Aras'037 discloses predicting the future host network resource demand based on the initial host network resource demand R(t) (see FIG. 14, step 1403, Available Bandwidth) and the predicted change in handoff host network resource demand delta R (see FIG. 14, step 1403, the difference/delta between requested bandwidth and available bandwidth; note that the prediction network resource and granting the request is based upon the available bandwidth and the difference/delta bandwidth; see col. 9, lines 10-65).

In view of this, having the system of Aras'037 and then given the teaching of Tellinger'273, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Aras'037 for the same motivation as stated above in Claims 1-6.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aras'037 in view of Polydoros (U.S. 5,432,821).

Regarding claim 8, Aras'037 discloses using ARIMA as described above in claim 1. Aras'037 does not explicitly disclose ARMA.

However, the above-mentioned claimed limitations are taught by Polydoros'821. In particular, Polydoros'821 teaches using ARMA (see col. 4, line 53-55, see col. 5, lines 59-61; see col. 12, lines 60-67; see col. 20, lines 36-59; estimation by utilizing ARMA).

In view of this, having the system of Aras'037 and then given the teaching of Polydoros'821, it would have been obvious to one having ordinary skill in the art at the time

the invention was made to modify the system of Aras'037, by providing ARMA, as taught by Polydoros'821. The motivation to combine is to obtain the advantages/benefits taught by Polydoros'821 since Polydoros'821 states at col. 3, line 5-27; see col. 12, lines 60 to col. 13, lines 5 that such modification would provide the mechanism of not requiring the feedback the best survivor to update a single channel estimator, since, when the survivor has been selected, the associated channel estimator is already established, and ARMA model also be useful in the case of channel with long impulse response.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 571-272-3085. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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10/13/04

BRIAN NGUYEN
PRIMARY EXAMINER